

METHOD AND APPARATUS FOR LOCALIZED DELIVERY OF AUDIO SOUND FOR ENHANCED PRIVACY

ABSTRACT OF THE DISCLOSURE

A directional audio apparatus that provides directional delivery of audio output is disclosed. The audio output is targeted to those one or more persons desirous of hearing the audio output. Consequently, other persons not desirous of hearing the audio output do not receive substantial amounts of the audio output and thus are less disturbed by the unwanted audio sounds. In one embodiment, the directional audio apparatus includes a directional speaker, whose audio output is generated through ultrasonic signals. The directional speaker includes a number of speaker elements. A number of the attributes of the audio output can be controlled, either by a user or by monitored measurements. Such attributes include the beam width, the beam direction, the degree of isolation or privacy, and the volume of the audio outputs. The audio output can also be personalized or modified according to the audio conditions of the surroundings of the apparatus. To control these attributes or characteristics, a number of approaches can be used. For example, the surface of the speaker can be segmented or curved, the ultrasonic frequencies can be changed, the phases to individual speaker elements can be adjusted, or the path lengths of the ultrasonic waves from the emitting surface of the speaker can be elongated before the audio output emits into free space. Also, more than one directional speaker can be used to generate stereo effects.